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CLAIMS

~~1. Apparatus (101) for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the apparatus comprising~~

~~a determination unit (118) comprising a probability table (110) for providing a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS).~~

2. Apparatus according to claim 1 further comprising a first storage unit (102) for storing at least one symbol of the first component (PCS) and a second storage unit (104) for storing at least one symbol of the second component (DCS).

3. Apparatus according to claim 1, wherein the pulse position (DDS) is the most-likely pulse position.

4. Apparatus according to claim 1, wherein the probability table (110) is based on Bayes' probability.

5. Apparatus according to claim 1, wherein the probability table (110) comprises an asymmetric table, preferably a diagonally asymmetric table.

6. Apparatus according to claim 5, wherein in the case that the first component (PCS) shows a legal symbol then the second component (DCS) has no influence on the value.

7. Apparatus according to claim 1, wherein the quality of the first component (PCS) is better than that of the second component (DCS).

8. Apparatus according to claim 1, wherein the probability table (110) comprises a symmetric table, preferably a diagonally symmetric table.

9. Apparatus according to claim 1, wherein the probability table (110) comprises more than two dimensions.

10. Apparatus according to claim 1, wherein the probability table (110) is storable in a memory (118), such as a read only memory (ROM) and/or a random access memory (RAM), and wherein two or more probability tables (110) are usable.

11. Apparatus according to claim 1, wherein the determination unit (118) derives the pulse position (DDS) by a prestored formula, preferably a probability based formula, whereby the at least one symbol of the first component (PCS) and the at least one symbol of the second component (DCS) represent signal values for input to the formula.

12. Apparatus according to claim 1 further comprising means (122) for detecting an illegal symbol.

13. Apparatus according to claim 12, wherein the means (122) for detecting an illegal symbol are logic circuits (122) or an extension of the probability table (110).

14. Apparatus according to claim 1, wherein the signal comprises an infrared signal.

15. Apparatus according to claim 1, wherein the pulse modulation comprises a Pulse Position Modulation (PPM), preferably a 4-PPM modulation.

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/16. A method for determining a pulse position for a signal encoded by a pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising the step of:

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS).

17. Method according to claim 16, further comprising the steps of storing at least one symbol of the first component (PCS) and storing at least one symbol of the second component (DCS).

18. A receiving method comprising: determining the quality of at least two digital signals (S), by

sampling each digital signal (S) with a number n of samples per defined pulse width, whereby $n \geq 1$;

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detecting an edge of a pulse of each sampled component;

counting the clock cycles between edges;

comparing the counted clock cycles (EEC) with a prestored reference-value (EEC_0) in order to output a deviation value (RJ) as a measure for the instantaneous quality of each digital signal (S);

feeding the deviation value (RJ) to an absolute-value limiter unit (42) that provides an absolute deviation value (LPJ) and feeding the absolute deviation value (LPJ) to a storage latch (43) that outputs the absolute deviation value (PJ);

feeding the absolute deviation value (PJ) to a leaky integrator (50) that outputs a signal quality measure (J);

detecting from the at least two digital signals the signal with the best signal quality measure (PCS) and the second-best signal quality measure (DCS) and defining them as the first component (PCS) and the second component (DCS);

selecting the first component (PCS) and the second component (DCS); and,

determining the pulse position as claimed in claim 15.

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19. A receiver system (80) comprising an apparatus (101) according to one of the preceding claims 1 to 15 and a channel multiplexer (70) for determining the quality of at least two components (S), the channel multiplexer (70) comprising

a sampler (10) using clock cycles (CLK) for sampling of one of the at least two digital signals (S) with a number n of samples per defined pulse width, whereby $n \geq 1$;

an edge detector (20) for detecting an edge of a pulse of each sampled digital signal;

a counter (30) for counting the clock cycles between edges detected by the edge detector;

a deviation detector (40) being able to compare the counted clock cycles (EEC) with a prestored reference-value (EEC_0) in order to provide a deviation value (RJ) as a measure for the instantaneous quality of the digital signal (S);

a minimum-maximum detector (72) for detecting from the at least two digital signals the signal with the best signal quality measure (PCS) and the second-best signal quality measure (DCS) and defining them as the first component (PCS) and the second component (DCS); and

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a diversity multiplexer (74) for selecting the first component (PCS) and the second component (DCS), these components (PCS, DCS) being feedable as input to the apparatus (101).

20. A computer program comprising program code means for performing the method of claim 16 when said program is run on a computer.

21. A computer program product comprising program code means stored on a computer readable medium for performing the method of claim 16 when said program product is run on a computer.

add a2

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